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14. ABSTRACT

This technical report explores recent trends in the unemployment of recent veterans as estimated from two nationally representative surveys, the Current Population Survey (CPS) and the American Community Survey (ACS). Analyses of CPS data indicates that veteran youth unemployment increased relative to nonveteran youth unemployment between 2003 and 2005 (and that this relative increase is statistically significant) and that veteran youth unemployment decreased between 2005 and 2006. However, analysis of ACS unemployment data also draws into question whether veteran youth unemployment in fact increased relative to nonveteran youth unemployment between 2003 and 2005. While veteran youth unemployment did increase in the ACS data between 2003 and 2004, it fell between 2004 and 2005, and none of those changes in unemployment rates relative to changes in nonveteran youth unemployment rates is statistically significant.

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TECHNICAL REPORT

Recent Trends in Veteran Unemployment as Measured in the Current Population Survey and the American Community Survey

Bogdan Savych, Jacob Alex Klerman, David S. Loughran

Prepared for the Office of the Secretary of Defense

RAND NATIONAL DEFENSE RESEARCH INSTITUTE

The research was sponsored by the Office of the Secretary of Defense and conducted within the Forces and Resources Policy Center of the RAND National Defense Research Institute (NDRI), a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Department of the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community under Contract W74V8H-06-C-0002.

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Preface

This technical report explores recent trends in the unemployment of recent veterans as estimated from two nationally representative surveys, the Current Population Survey (CPS) and the American Community Survey (ACS). The report was produced as part of the RAND Corporation project "Understanding Recent Trends in Veteran Unemployment," which seeks to understand the causes and consequences of unemployment among recently separated active-component military personnel and reservists returning home from extended periods of active-duty service. This report and the broader project will be of interest to policymakers and others concerned about the post-service labor market experiences of U.S. military personnel.

The research was sponsored by the Office of the Assistant Secretary of Defense (Reserve Affairs) and conducted within the Forces and Resources Policy Center of the RAND National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense, the Joint Staff, the Unified Combatant Commands, the Department of the Navy, the Marine Corps, the defense agencies, and the defense Intelligence Community.

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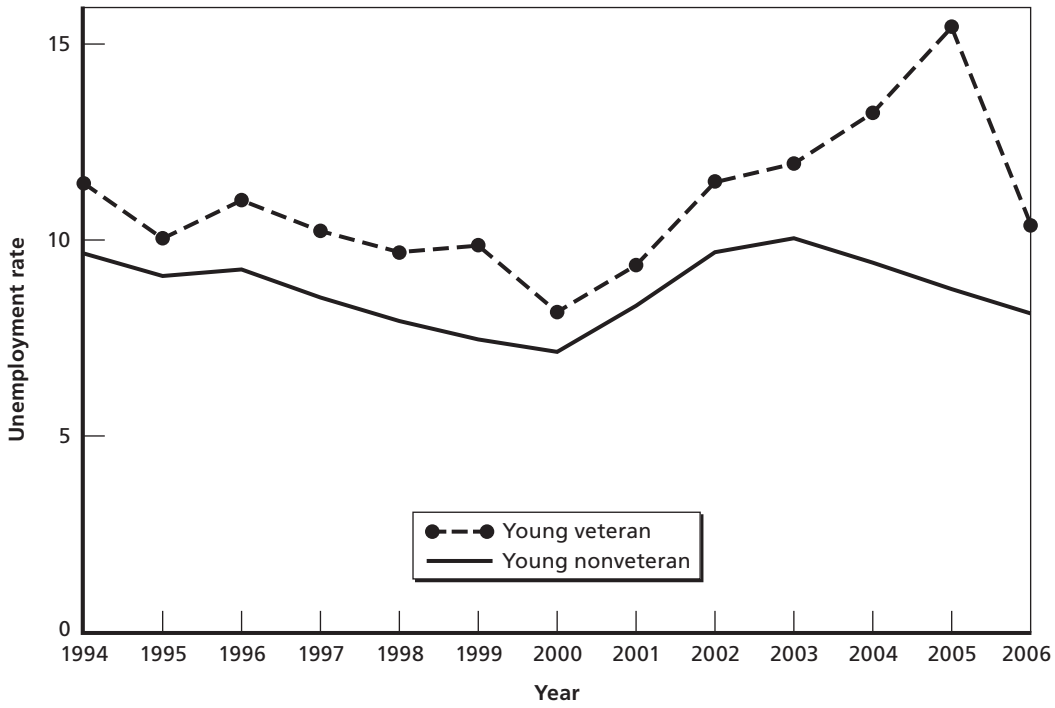
Official Bureau of Labor Statistics tabulations from the CPS show that the unemployment rate of young veterans ages 20–24 increased from 11.0 percent in 2003 to 15.6 percent in 2005. The increase in unemployment among veteran youth was particularly worrisome to policymakers since, between those same years, the overall youth unemployment rate declined (see Figure S.1). In 2006, however, official statistics show that the unemployment rate of veteran youth returned to a level more consistent with long-run historic norms (10.4 percent in 2006).

Figure S.1
Youth Unemployment Rate, by Veteran Status



SOURCE: Authors' computations based on 1994–2006 monthly CPS data.
NOTE: Sample restricted to youth ages 20–24 in the labor force.
RAND *TR485-S.1*

This increase in veteran youth unemployment between 2003 and 2005 is worrisome since it raises the possibility that young veterans are having difficulty transitioning to civilian jobs following deployment to Iraq or Afghanistan. On the other hand, the decrease in veteran youth unemployment between 2005 and 2006 is seen by some as a sign that veteran transition programs are helping veterans successfully transition to the civilian labor market.

While these are reasonable hypotheses, there is also an alternative explanation. In this report, we explore whether the increase in unemployment among veteran youth between 2003 and 2005, and then its decrease in 2006, can be attributed to sampling variation alone. We do this by computing unemployment rates in the CPS and in the much larger ACS and formally testing whether the variation in veteran and nonveteran unemployment rates is statistically significant.

Veteran Unemployment in the CPS

The CPS's sample size of approximately 50,000 households makes it among the largest regular surveys in the world. However, young veterans are relatively rare in the overall population. On average, about 115 young veterans take part in each monthly CPS, about 96 of whom are in the labor force. The small number of young veterans surveyed in the CPS means that unemployment statistics for that group are likely to vary considerably from month to month because of sampling variability (i.e., which dwelling units happen to be selected for the sample) alone.

Figure S.1 illustrates that between 2003 and 2005, the unemployment rate of young veterans included in the CPS increased by 4.6 percentage points, whereas the unemployment rate of nonveteran youth decreased by 1.9 percentage points. However, between 2005 and 2006, the veteran youth unemployment rate decreased by 5.2 percentage points, whereas the nonveteran youth unemployment rate decreased by only 0.6 percentage points. Thus, the gap between veteran and nonveteran unemployment rates increased sharply between 2003 and 2005 and then decreased sharply between 2005 and 2006.

Are the wide swings in the unemployment rate of veteran youth indicated by the CPS real or simply the result of sampling variation? To investigate the possibility that sampling variation is the cause of these swings in veteran youth unemployment, we computed standard errors on the annual point estimates of the veteran and nonveteran youth unemployment rates, accounting for the CPS's sampling design and the fact that CPS respondents are surveyed multiple times per year.

We then formally tested two hypotheses. The first hypothesis is that the changes in unemployment rates between 2003 and 2005 of veteran and nonveteran youth are equivalent:

$$H_1 : \Delta_1 = \left[U_{05}^{V} - U_{03}^{V} \right] - \left[U_{05}^{NV} - U_{03}^{NV} \right] = 0$$

where U_t^V is the unemployment rate of veteran youth in year t and U_t^{NV} is the unemployment rate of nonveteran youth in year t. Thus, Δ_1 is the difference between the change in veteran youth unemployment between 2003 and 2005 and the change in nonveteran youth unemployment between 2003 and 2005, which is 4.8 percentage points. We estimate a standard error of

2.4 percentage points on Δ_1.[1] Thus, Δ_1 is statistically significant at the 95-percent confidence level, and so we can reject the hypothesis that the changes in unemployment rates between 2003 and 2005 of veterans and nonveteran youth are equivalent.

The second hypothesis is that the changes in unemployment rates between 2005 and 2006 of veteran and nonveteran youth are equivalent:

$$H_2 : \Delta_2 = \left[U_{06}^{V} - U_{05}^{V} \right] - \left[U_{06}^{NV} - U_{05}^{NV} \right] = 0$$

So, Δ_2 is the difference between the change in veteran youth unemployment between 2006 and 2005 and the change in nonveteran youth unemployment between 2006 and 2005, which is –4.5 percentage points. We estimate a standard error of 2.3 percentage points on Δ_2.[2] The p-value for Δ_2 is 0.052, which means that Δ_2 is on the margin of statistical significance at the 95-percent confidence level.

To summarize, while estimated changes in the veteran youth unemployment rate between 2003 and 2006 are large, so are the standard errors associated with those estimates. Nonetheless, the CPS data show that veteran youth unemployment increased by more than nonveteran youth unemployment between 2003 and 2005 and that this relative increase is statistically significant at the 95-percent confidence level. The relative decline in veteran youth unemployment between 2005 and 2006 is statistically significant at the 94-percent confidence level. We note, however, that we most likely underestimate standard errors in both cases since we have insufficient information to fully account for the sampling structure of the CPS. If these standard errors are in fact underestimated, then it is likely that we would fail to reject either hypothesis at the 95-percent confidence level and perhaps even at the 90-percent confidence level.

Veteran Unemployment in the ACS

The ACS contains a much larger sample of veteran youth than does the CPS. In 2005, the ACS contained more than 2,300 young veterans. Furthermore, unlike the CPS, the ACS interviews a new sample each month; the fact that these 2,300 observations are independent from one another improves our ability to make inferences from this sample relative to the CPS sample.

Figure S.2 plots annual unemployment rates for veteran and nonveteran youth between 2000 and 2005 in the CPS and ACS. The time-series in unemployment for nonveteran youth in the ACS is similar to what we observe in the CPS, but the time-series in unemployment for veteran youth is somewhat different. In particular, while veteran youth unemployment increases between 2003 and 2004, as in the CPS, it falls back to its 2003 level in 2005.

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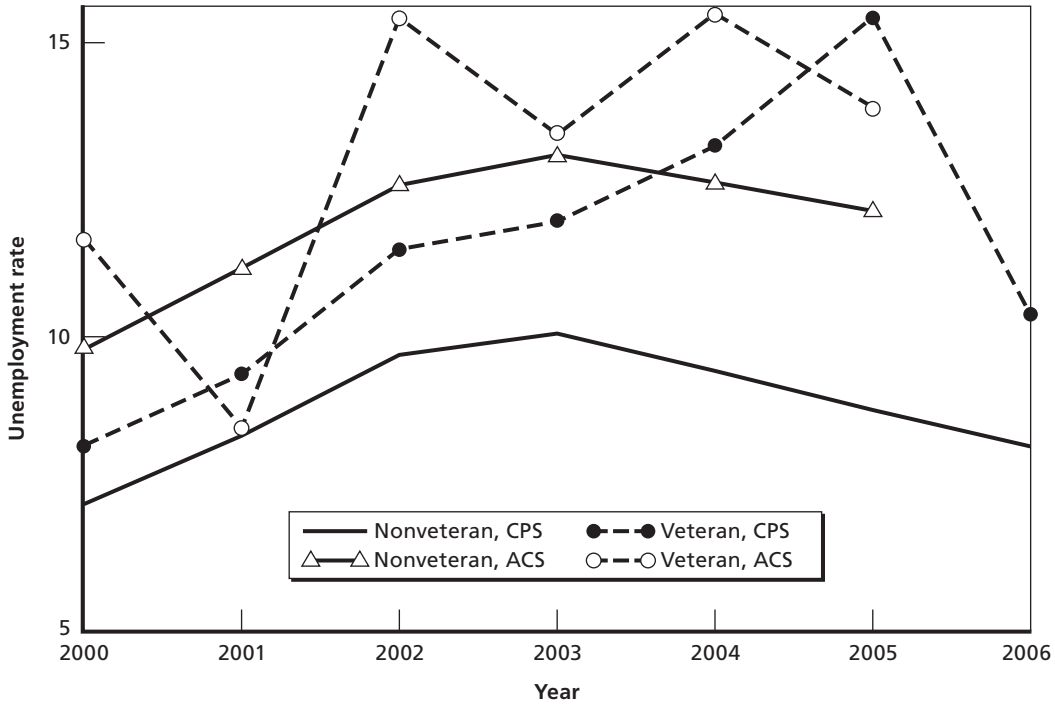
[1] We computed the difference and its standard errors using the "lincom" command in Stata. The standard errors take into account the structure of the CPS as described in the text above. The 95-percent confidence interval for Δ_1 is (0.2, 9.4) percentage points.

[2] The 95-percent confidence interval on Δ_2 is (–8.9, 0.04) percentage points.

Figure S.2
CPS and ACS Unemployment Rate, by Veteran Status and Year: Youth Age 20–24



SOURCE: Authors' computations based on 1994–2006 monthly CPS data and 2000–2005 PUMS ACS.
RAND *TR485-S.2*

As we did with the CPS, using ACS data, we tested whether the unemployment rate of veteran youth trends differently than the unemployment rate of nonveteran youth. To test this hypothesis, we computed the following differences and estimated their standard errors:

$$\Delta_1 = \left[U_{04}^{V} - U_{03}^{V}\right] - \left[U_{04}^{NV} - U_{03}^{NV}\right] \text{ and } \Delta_2 = \left[U_{05}^{V} - U_{03}^{V}\right] - \left[U_{05}^{NV} - U_{03}^{NV}\right]$$

We estimate Δ_1 to be 2.5 percentage points with a standard error of 1.7 and Δ_2 to be 1.4 percentage points with a standard error of 1.7.[3] Neither difference is statistically significant at the 95-percent confidence level. Thus, we conclude that, unlike in the CPS, the ACS provides no evidence that unemployment of veteran youth increased relative to nonveteran youth between 2003 and 2005.

[3] The 95-percent confidence interval on Δ_1 is (–1.4,6.4), and the confidence interval on Δ_2 is (–1.9, 4.7).

Discussion

Our analysis of CPS data, the official source for unemployment statistics in the United States, indicates that veteran youth unemployment increased relative to nonveteran youth unemployment between 2003 and 2005 and that this relative increase is statistically significant. The CPS data also show that veteran youth unemployment decreased between 2005 and 2006.

The seesaw pattern in veteran unemployment between 2003 and 2006 is difficult to understand in light of current events. It seems possible that veteran youth unemployment could have increased between 2003 and 2005 as large numbers of active-component and reserve personnel returned to the civilian labor market following lengthy deployments to Iraq or Afghanistan. But why would veteran youth unemployment then fall between 2005 and 2006? It is difficult to believe that economic conditions in general could have such widely differing impacts on the civilian labor market outcomes of veterans and nonveterans. It also seems unlikely that the availability of transition-assistance programs for veterans could account for this large relative decline in unemployment.

In order to argue that the decline in veteran youth unemployment between 2005 and 2006 was attributable to transition-assistance programs offered by the U.S. Department of Defense, the U.S. Department of Labor, and the U.S. Department of Veteran Affairs, one would need to argue both that these programs have a large positive effect on military-civilian transitions in general and that they were substantially more effective in late 2005 and early 2006 than they had been in the previous three years. On the first issue, evidence from random assignment studies suggests that the effects of employment-assistance programs in general are likely to be small.[4] On the second issue, we are unaware of any major changes in these transition programs that would lead to substantially larger program effects in 2006 than in previous years.[5]

Our analysis of ACS unemployment data also draws into question whether veteran youth unemployment, in fact, increased relative to nonveteran youth unemployment between 2003 and 2005. While veteran youth unemployment did increase in the ACS data between 2003 and 2004, it fell between 2004 and 2005, and none of those changes in unemployment rates relative to changes in nonveteran youth unemployment rates is statistically significant.

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[4] See, for example, Greenberg et al. (2005, 2001).

[5] Strengthening the argument that the drop in veteran youth unemployment is unlikely to be due to transition-assistance programs, young veterans sampled by the CPS in 2006 could have separated in any number of years before that date. Consequently, veterans in this sample would have received their transition assistance in a number of different years and so we would expect even major improvements in transition programs to have only modest effects on unemployment in this overall sample of veterans.

Abbreviations

ACS	American Community Survey
BLS	Bureau of Labor Statistics
CPS	Current Population Survey
DoD	Department of Defense
DoL	Department of Labor
DMDC	Defense Manpower Data Center
DVA	Department of Veteran Affairs
PUMS	Public Use Microdata Sample

CHAPTER ONE

Introduction

Since September 11, 2001, hundreds of thousands of American active and reserve military personnel have been deployed in support of the Global War on Terrorism. This total includes deployments to foreign war zones, such as Iraq and Afghanistan, as well as deployments to locations within the United States. Each year, a large number of these servicemen and women enter or reenter the civilian labor market. Active-component personnel complete their contractual obligations and choose or are selected to separate from military service, at which point they enter the civilian labor market, many for the first time. Reservists return home from periods of active-duty service and resume their civilian careers. In 2006, approximately 175,000 active-component personnel separated from the military and more than 110,000 reservists returned home from a period of active-duty service of 30 or more days.[1]

The U.S. Department of Defense (DoD), the U.S. Department of Veteran Affairs (DVA), and the U.S. Department of Labor (DoL) all devote considerable resources to helping veterans transition to civilian employment. For example, DoL investigates and mediates complaints made under the Uniformed Services Employment and Reemployment Rights Act, which provides certain employment guarantees to veterans; in cooperation with individual states, DoL also administers Unemployment Compensation for Ex-Servicemembers, which provides benefits to recently separated active-componet personnel and to reservists who are unemployed following a period of active-duty service of 90 or more days. DVA and DoL together administer the Transition Assistance Program, the Disability Transition Assistance Program, and the Vocational Rehabilitation and Employment Program. DoD offers a variety of service-specific programs during demobilization that assist active and reserve personnel in their return to civilian life and employment.

Thus, it was of great concern to these federal agencies and others interested in the well-being of veterans when official unemployment statistics reported by the Bureau of Labor Statistics (BLS) showed a sharp increase in the unemployment rate of veteran youth (ages 20–24) between 2003 and 2005.[2] The official unemployment rate of veteran youth in calendar year 2005 was 15.6 percent, the highest recorded rate in more than two decades. The increase in

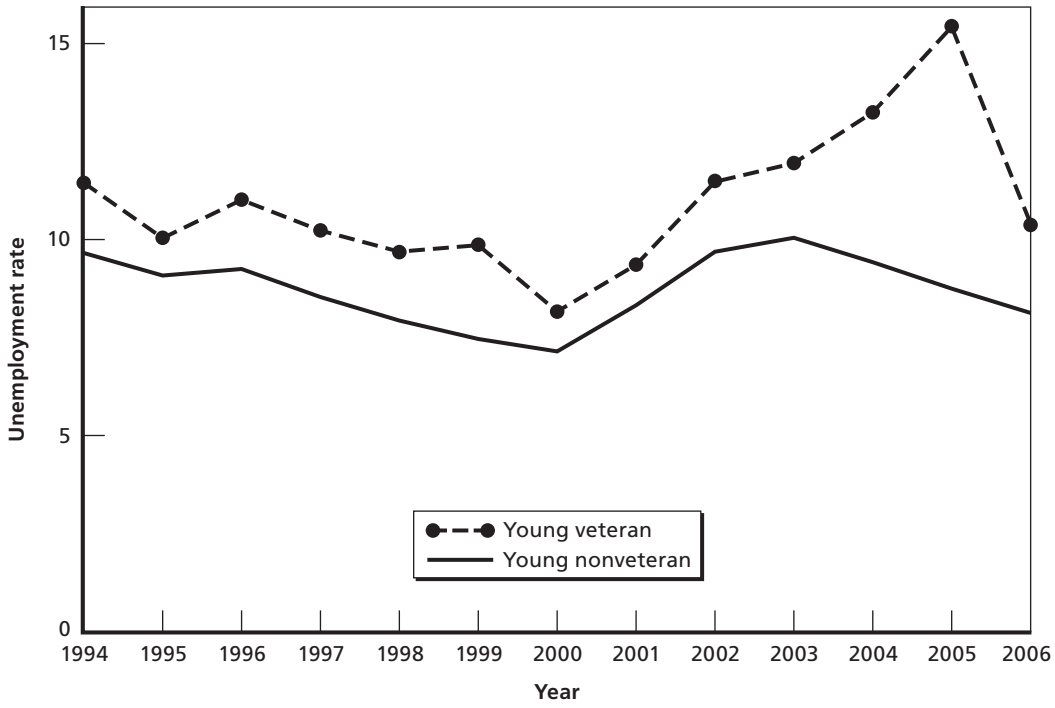
[1] Authors' computations from the Work Experience File and the Global War on Terrorism Contingency File maintained by the Defense Manpower Data Center (DMDC). See DMDC (2006) for a description of these data files.

[2] For example, see newspaper articles in the *St. Petersburg Times* and *Los Angeles Times* that reference this increase in veteran unemployment (Rexrode, 2006, and Spano, 2006). Also, see remarks made by Senator Larry Craig at hearings of the Senate Veterans Affairs Committee:

unemployment among veteran youth was particularly worrisome since, between those same years, the overall youth unemployment rate declined (see Figure 1.1). In 2006, however, official statistics show that the unemployment rate of veteran youth returned to a level more consistent with long-run historic norms (10.4 percent in 2006).

This increase in veteran youth unemployment between 2003 and 2005 was worrisome since it raised the possibility that young veterans were having difficulty transitioning to civilian jobs following deployment to Iraq and Afghanistan. On the other hand, the decrease in veteran youth unemployment between 2005 and 2006 was seen by some as a sign that veteran transition programs were helping veterans successfully transition to the civilian labor market.[3] While these are reasonable hypotheses, an alternative explanation is also possible.

Figure 1.1
Youth Unemployment Rate, by Veteran Status



SOURCE: Authors' computations based on 1994–2006 monthly CPS data.
NOTE: Sample restricted to youth ages 20–24 in the labor force.
RAND *TR485-1.1*

Ensuring a smooth transition for those young service members who bravely fought for freedom should be a national priority. Yet as the chart behind me shows, these unemployment rates among young veterans have risen dramatically since the war on terror began and now are approaching double the unemployment rate of nonveterans in the same age group. I must add, in a strong economy, as is true in most areas of our country, these figures just don't fit. (U.S. Senate, 2006.)

[3] For example, a DoL press release attributes part of the decline in veteran unemployment between 2005 and 2006 to DoL transition-assistance programs (see U.S. Department of Labor, 2007).

This report explores whether the increase in unemployment among veteran youth between 2003 and 2005, and then its decrease in 2006, can be attributed to sampling variation. Chapter Two describes the Current Population Survey (CPS) and how BLS uses those data to derive its official estimates of the unemployment rate. We report estimates of the youth unemployment rate from the CPS over time and investigate whether trends in those unemployment rates differ between veterans and nonveterans. In Chapter Three we report estimates of the youth unemployment rate derived from the much larger American Community Survey (ACS) and contrast those estimates to unemployment rates estimated from the CPS.

The final chapter of the report concludes that, although the increase in veteran youth unemployment relative to nonveteran youth unemployment between 2003 and 2005 as measured by the CPS is statistically significant, the substantial decline in measured veteran youth unemployment rates in 2006, combined with the fact that trends in veteran and nonveteran youth unemployment in the ACS are statistically indistinguishable, suggests that the CPS veteran youth unemployment trends likely reflect sampling variability rather than changes in economic forces or policy.

CHAPTER TWO

Veteran Unemployment in the CPS

This chapter considers evidence on veteran unemployment from the CPS. It begins by defining the unemployment rate as computed by BLS, describing the structure of the CPS, and discussing the computation of standard errors on CPS unemployment rates. Following this introductory material, the chapter presents estimates of unemployment rates from the CPS and formally tests whether their levels and trends vary between veterans and nonveterans.

The Unemployment Rate Concept

Official labor market statistics use a three-part employment classification: employed, unemployed, or out-of-the-labor force. An individual is considered to be unemployed if he or she is not currently employed,[1] has actively looked for work in the prior four weeks, and is currently available for work. The unemployment rate is defined as the ratio of unemployed individuals to the total population of employed and unemployed individuals. Individuals who are out of the labor force (i.e., neither employed nor unemployed) are excluded from the computation of the unemployment rate.

The Current Population Survey

Official estimates of the number of unemployed and employed individuals and the corresponding unemployment and employment rates are computed from the CPS. The CPS is a monthly survey of approximately 50,000 households that was designed specifically to generate reliable estimates of the level of and changes in the U.S. unemployment rate. In order to increase the precision of estimates of the change in the unemployment rate over time, a CPS dwelling unit (i.e., a unique address) is interviewed for four consecutive months, not interviewed for eight months, and then interviewed again for four months (the same four calendar months).[2] These

[1] Employed individuals consist of all persons who (1) did any work for pay or profit during the survey reference week, (2) did at least 15 hours of unpaid work in a family-operated enterprise, or (3) were temporarily absent from their regular jobs because of illness, vacation, bad weather, industrial dispute, or various personal reasons.

[2] For the purposes of estimating mean unemployment, we treat each monthly variable as separate observations. It is possible that some service members change their employment status between surveys, or even the leave labor force. Each of

households are then dropped from the sample.[3] New dwelling units are added to the sample every month to maintain an approximately constant sample size.

Sampling Variability

The CPS's sample size of approximately 50,000 households makes it among the largest regular surveys in the world. However, young veterans are relatively rare in the overall population. In 2006, there were only about 310,000 young veterans in the U.S. population.[4] Since the CPS surveys approximately 1 in 2,000 individuals in the United States, we would expect to find about 150 young veterans in any monthly CPS interview. In fact, on average, there are about 115 young veterans in each monthly CPS. About 16 percent of young veterans are out of the labor force, which leaves, on average, about 96 young veterans in the labor force in each monthly CPS.

The small number of young veterans included in the CPS means that unemployment statistics for that group are likely to vary considerably from month to month because of sampling variability (i.e., which dwelling units happen to be selected for the sample) alone. Assuming simple random sampling, a simplified calculation would suggest that an unemployment rate of 10 percent estimated from a sample of 96 young veterans in a single month would have a standard error of about 3.1 percent. In other words, 95 percent of the time, we would expect the true unemployment rate to be 10 percent plus or minus 6 percent.[5]

Actual standard errors for veteran youth unemployment rates in the CPS are likely to be somewhat lower than this. The official annual unemployment rate is an average of 12 monthly unemployment rates. Thus, annual unemployment statistics for young veterans are based on approximately $96 \times 12 = 1{,}152$ observations. However, since the same individuals are interviewed up to four separate times over the course of a single year, these 1,152 observations are not independent. In a given year, the CPS collects information from approximately 520 different young veterans. Thus, both because the number of different young veterans surveyed in a given year is considerably larger than 115 and because these individuals are surveyed multiple times, standard errors on annual unemployment rates of young veterans in the CPS are lower than a simplified calculation of standard errors on monthly unemployment rates would suggest. On the other hand, the CPS is a complex multistage survey. Accounting for stratification,

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those records are compared with only the other records from the same period.

[3] For more information on the design of the CPS, see U.S. Census Bureau, 2007b.

[4] Estimated from administrative records of the Defense Enrollment Eligibility Reporting System; these records include all active-duty and reserve personnel.

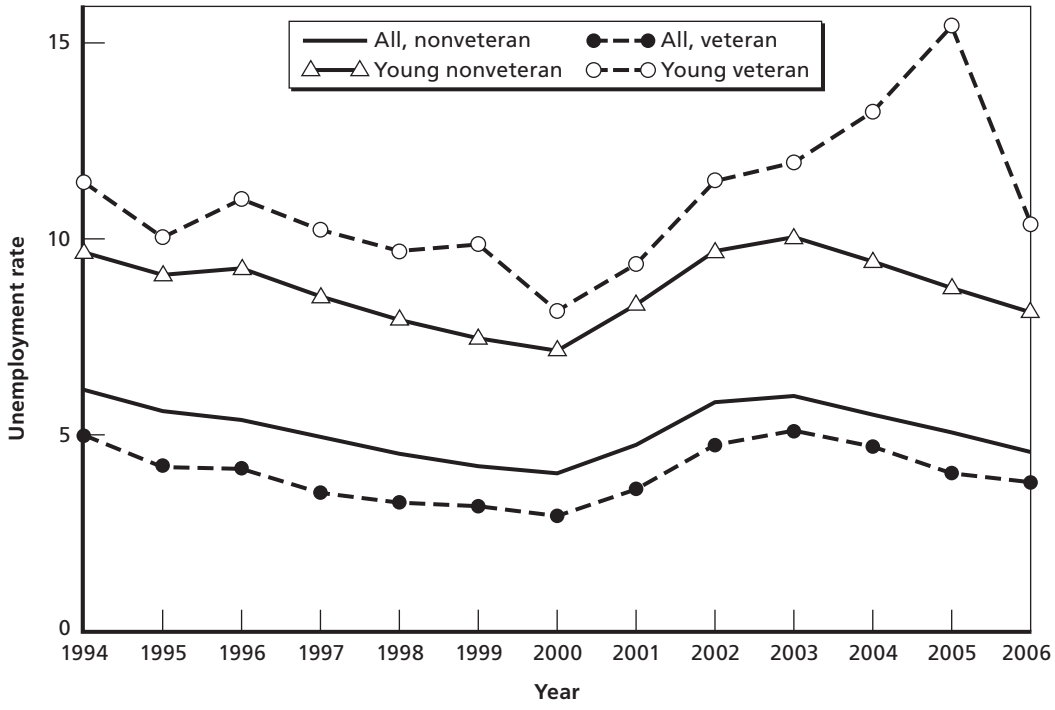
[5] $\hat{\sigma} = \sqrt{\frac{\hat{p}(1-\hat{p})}{n}} = \sqrt{\frac{.1 \times .9}{96}}$, where $\hat{p}$ is the estimated unemployment rate.

clustering, and weighting will tend to increase estimated standard errors significantly relative to the simplified calculation of standard errors reported above.[6]

Unemployment Estimates from the CPS

Figure 2.1 plots the official time series for nonveteran and veteran unemployment, by age. The figure shows that overall nonveteran unemployment fluctuated around 5 percent between 1994 and 2006, noticeably declining between 1994 and 2000, then increasing through 2003, and falling thereafter. Overall, veteran unemployment was about one percentage point less on average than nonveteran unemployment during this period, but the trends in the two series over time are quite similar.

Figure 2.1
CPS Unemployment Rate, by Veteran Status, Age, and Year



SOURCE: Authors' computations based on 1994–2006 monthly CPS data.
RAND *TR485-2.1*

[6] True standard errors for the young veteran population (as estimated by BLS) are 70 percent higher than the naïve standard error estimates shown in the previous footnote (i.e., assuming a simple random sample rather than the CPS's actual multistage design).

Figure 2.1 also plots unemployment rates for veteran and nonveteran youth (age 20–24). The highest unemployment rates plotted in Figure 2.1 are for veteran youth. Their unemployment rates are about 1.6 percentage points higher than the unemployment rates of nonveteran youth between 1994 and 2003. Relatively high youth unemployment is to be expected because it takes time for individuals to settle into long-term employment following high school or college. Recent labor-market entrants typically go through a period of "job shopping" as they seek a good employer match, and periods of unemployment may result.[7] Young veterans enter the civilian labor market for the first time at a later age on average than their nonveteran peers, and so it is not surprising that they may experience higher unemployment at those ages as they begin the job shopping process.

Of greater significance for this research is the observation that between 2003 and 2005, the unemployment rate of young veterans increased by 4.6 percentage points, whereas the unemployment rate of nonveteran youth decreased by 1.9 percentage points. However, between 2005 and 2006, the veteran youth unemployment rate decreased by 5.2 percentage points, whereas the nonveteran youth unemployment rate decreased by only 0.6 percentage points. Thus, the gap between veteran and nonveteran unemployment rates increased sharply between 2003 and 2005 and then decreased sharply between 2005 and 2006.

Are the wide swings in the unemployment rate of veteran youth indicated by the CPS real or simply the result of sampling variation? To investigate the possibility that sampling variation is the cause of these swings in veteran youth unemployment, we computed standard errors on the annual point estimates of the veteran and nonveteran youth unemployment rates accounting for (1) the CPS's sampling design and (2) the fact that CPS respondents are surveyed multiple times per year. We estimated standard errors from the monthly CPS micro-data following the approach outlined in Davern et al. (2006). We corrected for the CPS's sample design by defining strata as the lowest level of identifiable geography in the CPS data (the county or the metropolitan statistical area). We also took into account repeated observations over time by clustering at the household level.[8] This method only partially corrects for the complex structure of the CPS sampling design. In particular, the household-level clustering allows us to correct standard errors for correlation across household members and for repeated interviews across time. At the same time, we can account for only one stage of sampling. In comparison, the published CPS standard error estimates use the internal CPS data files and correct for multiple interviews to a given individual, serial correlation in employment across households, and the multistage nature of the sampling. Comparison of our standard error estimates with the published standard error estimates suggests that our standard errors are biased downward by about 4 percent.

Table 2.1 shows that the annual unemployment rates of veteran and nonveteran youth are statistically indistinguishable between 2000 and 2003. Even when we pool all observations

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[7] See, for example, Neumark (2002), Klerman and Karoly (1994), Topel and Ward (1992).

[8] The standard errors estimated by our method are 65 percent higher than the naïve standard error estimates in footnote 5 of this chapter (i.e., assuming a simple random sample, rather than the CPS's actual multistage design and multiple observations over time). Roughly 43 percent of this penalty is due to the multistage structure of the CPS, and the rest of the penalty is due to the repeated observations within a year.

Table 2.1
CPS Unemployment Rate for Youth Age 20–24, by Veteran Status and Year

	Veteran		Nonveteran		Difference	
Year	Mean	Standard Error	Mean	Standard Error	Mean	Standard Error
2000	8.2	1.1	7.1	0.2	1.0	1.1
2001	9.4	1.5	8.3	0.2	1.0	1.5
2002	11.5	1.6	9.7	0.2	1.8	1.6
2003	12.0	1.5	10.0	0.2	1.9	1.5
2004	13.2	1.7	9.4	0.2	3.8	1.7[a]
2005	15.4	1.9	8.7	0.2	6.7	1.9[a]
2006	10.4	1.4	8.1	0.2	2.2	1.4

SOURCE: Authors' computations based on 1994–2006 monthly CPS data.

[a] We can reject the hypothesis that the unemployment rate in the sample of veterans is the same as the unemployment rate in the sample of nonveterans at the 95-percent confidence level. The sample is limited to respondents age 20–24 in the labor force. Sample sizes range between 1,076 and 1,191 for veterans and between 68,430 and 78,103 for nonveterans.

over those years, the difference between the veteran and nonveteran youth unemployment rates (1.2 percent) is not statistically significant at the 95-percent confidence level. The annual difference between the veteran and nonveteran youth unemployment rate is statistically different in 2004 and 2005 but not in 2006.[9]

The central question of our research, however, was whether the unemployment rate of veteran youth trended differently than the unemployment rate of nonveteran youth between 2003 and 2005. To examine this question, we tested two hypotheses. The first hypothesis is that the changes in unemployment rates between 2003 and 2005 of veteran and nonveteran youth are equivalent:

$$H_1 : \Delta_1 = \left[U_{05}^{V} - U_{03}^{V} \right] - \left[U_{05}^{NV} - U_{03}^{NV} \right] = 0$$

where U_t^V is the unemployment rate of veteran youth in year t and U_t^{NV} is the unemployment rate of nonveteran youth in year t. Thus, Δ_1 is the difference between the change in veteran youth unemployment between 2003 and 2005 and the change in nonveteran youth unemployment between 2003 and 2005, which is 4.8 percentage points. We estimate a standard error of

[9] The standard errors presented in Table 2.1 treat each test within a year as independent from the tests in the other years. It is possible, however, that the results that we obtained are due to random chance and the repeated nature of the statistical tests. The concept of the 5-percent significance level suggests that, for 1 in 20 random samples, we would expect to find significant results even if there is no relationship. If one believes that the assumption of the independence between tests is too strong, further penalty on the standard errors may be warranted if one wants to determine if there are real differences between veteran and nonveteran unemployment.

2.4 percentage points on Δ_1.[10] Thus, Δ_1 is statistically significant at the 95-percent confidence level, so we can reject the hypothesis that the changes in unemployment rates between 2003 and 2005 of veteran and nonveteran youth are equivalent.

The second hypothesis is that the changes in unemployment rates between 2005 and 2006 of veteran and nonveteran youth are equivalent:

$$H_2 : \Delta_2 = \left[U_{06}^{V} - U_{05}^{V} \right] - \left[U_{06}^{NV} - U_{05}^{NV} \right] = 0$$

So, Δ_2 is the difference between the change in veteran youth unemployment between 2006 and 2005 and the change in nonveteran youth unemployment between 2006 and 2005, which is –4.5 percentage points. We estimate a standard error of 2.3 percentage points on Δ_2.[11] The p-value for Δ_2 is 0.052, which means that Δ_2 is on the margin of statistical significance at the 95-percent confidence level.

The test outlined above is a single-point comparison. The test of Δ_1 is valid if we expect a priori to find different unemployment trends from 2003 to 2005 between veterans and nonveterans. We believe that 2005 was a time that this change would be expected because many service members were returning to civilian life after deployment. For example, many reservists returning from deployment may not have been able to go back to work for their previous employers, and some active-duty personnel who separate from the military might have taken longer than usual to find new jobs.

Further discounting of the statistical significance may be warranted if one does not believe the single-point nature of the test. Post hoc analysis of the trends in unemployment requires adjusting significance levels to take into account a multiple-comparison argument, which suggests that repeated tests of the hypothesis over time may require adjusting the significance level. In particular, at the 5-percent significance level, 1 of 20 random samples would be a statistically significant result, even if there is no true relationship. To avoid this concern, one may need to be more conservative with the test and increase the estimated standard error even further. If we do this, the estimated difference in trends will become insignificant, which would provide further support for our arguments.

To summarize, while estimated changes in the veteran youth unemployment rate between 2003 and 2006 are large, so are the standard errors associated with those estimates. Nonetheless, the CPS data show that veteran youth unemployment increased by more than nonveteran youth unemployment between 2003 and 2005 and that this relative increase is statistically significant at the 95-percent confidence level. The relative decline in veteran youth unemployment between 2005 and 2006 is statistically significant at the 94-percent confidence level. We note, however, that we most likely underestimate standard errors in both cases, since we have insufficient information to fully account for the sampling structure of the CPS. If these standard errors are in fact underestimated, then it is likely that we would fail to reject either

[10] We computed the difference and its standard errors using the "lincom" command in Stata after executing the "svy: mean" command. The standard errors take into account the structure of the CPS (described in the text above) and sampling weights. The 95-percent confidence interval for Δ_1 is (0.2, 9.4) percentage points.

[11] The 95-percent confidence interval on Δ_2 is (–8.9, 0.04) percentage points.

hypothesis at the 95-percent confidence level and perhaps even at the 90-percent confidence level.

CHAPTER THREE

Unemployment Estimates from the ACS

In this chapter, we present estimates of veteran and nonveteran unemployment from the much larger ACS. The ACS is a new household survey conducted by the Census Bureau and designed to replace the Long Form from the Decennial Census. The survey was designed to provide critical information about local communities on an annual basis. When fully implemented, the ACS will interview approximately 250,000 different households every month, about five times as many households as interviewed by the CPS. Furthermore, unlike the CPS, the ACS interviews a new sample each month. Thus, the ACS design reduces the impact of sampling variability by even more than is implied by a simple five-fold increase in the sample size.[1]

For our analysis, we used the Public Use Microdata Sample (PUMS) from the ACS. The sample size of PUMS ACS increased over time, representing the gradual implementation of the ACS. The ACS began in 2000 and was not fully implemented until 2005. Specifically, between 2001 and 2004, the PUMS ACS sample included about 480,000 households, or 1.2 million persons per year (see Table 3.1), and was limited to 1,240 counties covering 37.1 percent of the geography of United States.[2] This number of observations is slightly lower than the total

Table 3.1
Sample Sizes in the PUMS ACS, by Veteran Status, Age, and Year

		In Labor Force		Ages 20–24	
Year	Total Sample	Veterans	Nonveterans	Veterans	Nonveterans
2000	371,618	20,835	159,562	334	15,511
2001	1,192,206	65,454	509,847	1,069	48,633
2002	1,074,628	57,588	463,017	910	43,693
2003	1,194,928	61,431	519,461	998	49,311
2004	1,194,354	59,354	519,210	1,053	49,404
2005	2,878,380	136,112	1,251,483	2,315	115,466

SOURCE: 2000–2005 PUMS ACS.

[1] For information about the ACS, see U.S. Census Bureau, 2007a.

[2] U.S. Census Bureau, 2006. Estimates of the unemployment rate in 2005 do not change when we restrict our sample only to the areas in which the survey was conducted between 2001 and 2004.

number of interviews conducted by the CPS during those years, but, importantly, each PUMS ACS interview was conducted with a unique individual. This nonoverlap of the sample significantly improves the precision of estimates based on that sample relative to the CPS. In 2005, the PUMS ACS sample size more than doubled to almost 2.9 million, reflecting full implementation of the ACS. Data for 2006 were not available at the time we conducted our analysis.

Although the ACS and CPS use the same unemployment concepts, it appears that the ACS generates slightly higher estimates for the unemployment rate in any given year.[3] Differences in unemployment rates appear to be driven by differences in design and administration of the two surveys.[4] For instance, the CPS fields a more detailed series of questions about labor force participation than does the ACS. Whereas the ACS asks six questions to determine labor market status, the CPS asks nine questions. In addition, the CPS is administered by trained interviewers (in person at the first interview and typically by phone for subsequent interviews). The ACS is primarily conducted by mail.

The CPS and ACS also differ in the reference period assumed for their labor force participation questions. While the reference period in the CPS is the calendar week containing the 12th day of the month, the reference period for the employment items in the ACS is the full calendar week prior to the day the respondent answers the ACS questions. As a result, differences in estimated unemployment rates from the CPS and ACS may be the result of real changes in economic conditions, which we could ignore if the two surveys' reference periods coincided exactly.

Figure 3.1 plots annual unemployment rates by veteran status and age between 2000 and 2005 (also see Table 3.2). The levels and time series in unemployment for all veterans and nonveterans is very similar to what we observe in the CPS. The time-series in unemployment for nonveteran youth is also similar to what we observe in the CPS, but the time-series in unemployment for veteran youth is somewhat different (see Figure 3.2). In particular, while veteran youth unemployment increases between 2003 and 2004, as in the CPS, it falls back to its 2003 level in 2005. Note also the volatility in unemployment for veteran youth prior to 2003.

As we did with the CPS, using ACS data, we tested whether the unemployment rate of veteran youth trends differently than the unemployment rate of nonveteran youth. To test this hypothesis, we computed the following differences and estimated their standard errors:

$$\Delta_1 = \left[U_{04}^{V} - U_{03}^{V} \right] - \left[U_{04}^{NV} - U_{03}^{NV} \right] \text{ and } \Delta_2 = \left[U_{05}^{V} - U_{03}^{V} \right] - \left[U_{05}^{NV} - U_{03}^{NV} \right]$$

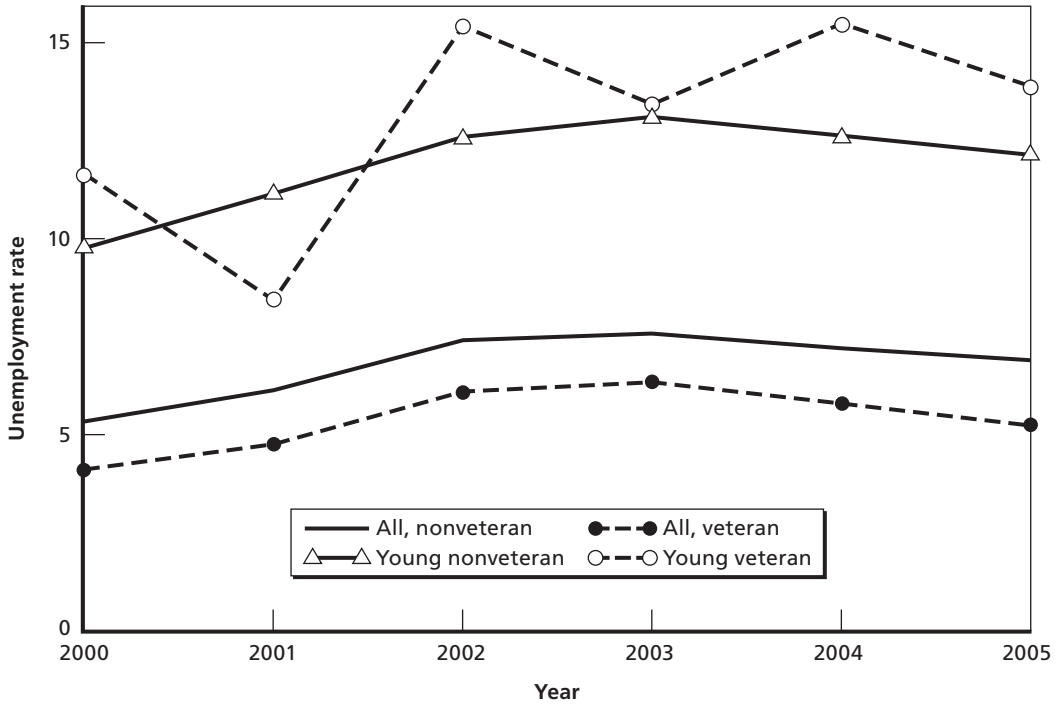
We estimate Δ_1 to be 2.5 percentage points with a standard error of 1.7 and Δ_2 to be 1.4 percentage points with a standard error of 1.7.[5] Neither difference is statistically significant at the

[3] Similar differences in estimated unemployment rates are also found between the CPS and the Decennial Census (Clark et al., 2003; Palumbo and Siegel, 2004).

[4] U.S. Census Bureau, 2004.

[5] The 95-percent confidence interval on Δ_1 is (–1.4,6.4), and the confidence interval on Δ_2 is (–1.9, 4.7).

Figure 3.1
ACS Unemployment Rate, by Veteran Status, Age, and Year



SOURCE: Authors' computations based on 2000–2005 PUMS ACS.
RAND *TR485-3.1*

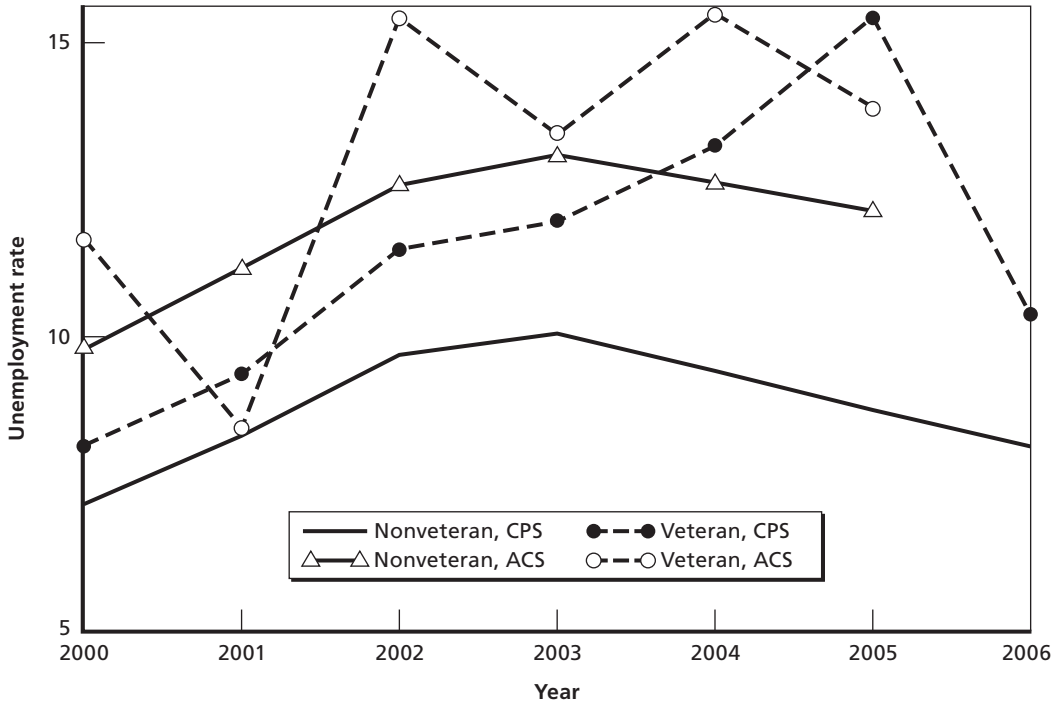
Table 3.2
ACS Unemployment Rate, by Veteran Status and Year: Youth Age 20–24

	Veteran		Nonveteran		Difference	
Year	Mean	Standard Error	Mean	Standard Error	Mean	Standard Error
2000	11.7	2.1	9.8	0.3	1.9	2.1
2001	8.4	1.0	11.2	0.2	-2.7	1.0[a]
2002	15.4	1.6	12.6	0.2	2.8	1.6
2003	13.4	1.3	13.1	0.2	0.4	1.4
2004	15.5	1.4	12.6	0.2	2.9	1.5[a]
2005	13.9	1.0	12.1	0.1	1.7	1.0

SOURCE: Authors' computations based on 2000–2005 PUMS ACS.

[a] We can reject the hypothesis that the unemployment rate in the sample of veterans is the same as the unemployment rate in the sample of nonveterans at the 95-percent confidence level. The sample is limited to respondents age 20–24 in the labor force.

Figure 3.2
CPS and ACS Unemployment Rate, by Veteran Status and Year: Youth Age 20–24



SOURCE: Authors' computations based on 1994–2006 monthly CPS data and 2000–2005 PUMS ACS.
RAND *TR485-3.2*

95-percent confidence level. Thus, we conclude that, unlike in the CPS, the ACS provides no evidence that unemployment of veteran youth increased relative to nonveteran youth between 2003 and 2005.

CHAPTER FOUR

Discussion

Our analysis of CPS data, the official source for unemployment statistics in the United States, indicates that veteran youth unemployment increased relative to nonveteran youth unemployment between 2003 and 2005 and that this relative increase is statistically significant. The CPS data also show that veteran youth unemployment decreased between 2005 and 2006.

The seesaw pattern in veteran unemployment between 2003 and 2006 is difficult to understand in light of current events. It seems possible that veteran youth unemployment could have increased between 2003 and 2005 as large numbers of active-component and reserve personnel returned to the civilian labor market following lengthy deployments to Iraq or Afghanistan. But why would veteran youth unemployment then fall between 2005 and 2006? It is difficult to believe that economic conditions in general could have such widely differing impacts on the civilian labor market outcomes of veterans and nonveterans. It also seems unlikely that the availability of transition-assistance programs for veterans could account for this large relative decline in unemployment.

In order to argue that the decline in veteran youth unemployment between 2005 and 2006 was attributable to transition-assistance programs offered by DoD, DoL, and DVA, one would need to argue both that these programs have a large positive effect on military-civilian transitions in general and that they were substantially more effective in late 2005 and early 2006 than they had been in the previous three years. On the first issue, evidence from random assignment studies suggests that the effects of employment-assistance programs in general are likely to be small.[1] On the second issue, we are unaware of any major changes in these transition programs that would lead to substantially larger program effects in 2006 than in previous years.[2]

Our analysis of ACS unemployment data also draws into question whether veteran youth unemployment in fact increased relative to nonveteran youth unemployment between 2003 and 2005. While veteran youth unemployment did increase in the ACS data between 2003

[1] See, for example, Greenberg et al. (2005, 2001)

[2] Strengthening the argument that the drop in veteran youth unemployment is unlikely to be due to transition-assistance programs, young veterans sampled by the CPS in 2006 could have separated in any number of years before that date. Consequently, veterans in this sample would have received their transition assistance in a number of different years, and so we would expect even major improvements in transition programs to have only modest effects on unemployment in this overall sample of veterans.

and 2004, it fell between 2004 and 2005, and none of those changes in unemployment rates relative to changes in nonveteran youth unemployment rates is statistically significant.

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